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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,693	09/29/2003	Steve Zhihua Zeng	1459-0300620	4166

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EXAMINER	
WANG, JIN CHENG	
ART UNIT	**PAPER NUMBER**
2672	

DATE MAILED: 01/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/673,693	ZENG, STEVE ZHIHUA	
	Examiner	Art Unit	
	Jin-Cheng Wang	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Withdrawal of Finality of Rejection

Applicant has called the Examiner regarding the finality of the last Office Action dated 10/18/2005. Applicant's request for reconsideration of the finality of the rejection of the last Office action dated 10/18/2005 is persuasive and, therefore, the finality of that action is withdrawn.

Response to Amendments

Applicant's submission on 8/1/2005 has been entered. Claims 1, 3-4, 7, 10, 16-18 have been amended. Claims 1-18 are pending in the present application.

Response to Arguments

Applicant's arguments filed August 1, 2005 have been fully considered but are moot in view of the ground(s) of rejection based on Parker et al. US Patent No. 5,528,704 (hereinafter Parker), in view of Greggain et al. U.S. Patent No. 5,594,676 (hereinafter Greggain).

Although Parker is silent to "a third variable indicating a number of right shifts which, when applied to the second variable, indicates a number of phases used in the scaling cycle", however, this claim limitation is related to the selection of the number of phases in an adaptive filtering wherein the adaptive filtering is well known in the art. Moreover, applicant's choice of the number of phases is determined from the output resolution, i.e., the number of output pixels, as being right shifted. This determination of the number of phases is rather arbitrary that the performance over other fixed size filter or other adaptive filter cannot be ascertained. Applicant

clearly failed to particularly identify what the advantage that such selection of the number of phases in an adaptive filtering would have been advantageous over the prior art of record.

Moreover, Greggain teaches an adaptive filter wherein the number of phases is determined using the filter lookup table as a function of the output resolution, i.e., the target increments and thus Greggain teaches an adaptive filtering wherein the number of phases depends upon the output resolution. Greggain mapping the target increment into a specific filter size or the number of phases (column 2). Greggain's number of upsample increments or the number of phases used in the adaptive filtering is determined using the right shifting the target output resolution parameter such as the target increment and moreover, Greggain's look up table for mapping the output resolution into the number of phases or the filter size may also be determined by the right shifting. Greggain thus expressly discloses "a third variable" from the output of the filter look-up table which maps the filter size to a filter factor and then right-shifts the target increment by this amount to generate the number of phases.

Therefore, having the combined teaching of Parker and Greggain as a whole, one of ordinary skill in the art would have found it obvious to incorporate adaptive filtering of Greggain into Parker's method to construct the number of phases from the output resolution by right shifting the number of output pixels in accordance to the user's defined target increments resulting in correctly Nyquist bandlimited target pixels or lines or frames of the warped images (See column 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Parker et al. US Patent No. 5,528,704 (hereinafter Parker), in view of Greggain et al. U.S. Patent No. 5,594,676 (hereinafter Greggain).

Claim 1:

Parker discloses a method comprising:

Determining an input resolution of an image (column 5-7);

Determining an output resolution of an image (column 5-7); and

Providing a plurality of parameter variables in bit word comprising a first variable indicating a number of input pixels in a scaling cycle (i.e., input tile size), and a second variable indicates a number of output pixels in a scaling cycle (i.e., output tile size), and the third variable indicates a number of phases used in the scaling cycle (i.e., the possible phases in column 8).

Although Parker is silent to "a control word", Parker discloses receiving the image pixels and the a plurality of resolution parameter variables extracted from the image pixels in bit words wherein the input and output raster image parameters may be in the form of the bit words which determines the input and output tile size, phases and registration (column 5). Therefore, Parker at least suggests the claim limitation of "a control word" comprising the plurality of resolution parameters as disclosed because a bit word is inherently within the pixel data structure wherein

the pixel comprises a plurality of bit words. By the same token, a plurality of bit parameters can be packed into a bit word to form a control word as claimed.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have constructed a control word from the plurality of resolution parameters for determining the output pixel values based on the input and output resolution, phases and registration (column 8).

Although Parker is silent to "a third variable indicating a number of right shifts which, when applied to the second variable, indicates a number of phases used in the scaling cycle", however, this claim limitation is related to the selection of the number of phases in an adaptive filtering wherein the adaptive filtering is well known in the art. Moreover, applicant's choice of the number of phases is determined from the output resolution, i.e., the number of output pixels, as being right shifted. This determination of the number of phases is rather arbitrary that the performance over other fixed size filter or other adaptive filter cannot be ascertained. Applicant clearly failed to particularly identify what the advantage that such selection of the number of phases in an adaptive filtering would have been advantageous over the prior art of record.

Moreover, Greggain teaches an adaptive filter wherein the number of phases is determined using the filter lookup table as a function of the output resolution, i.e., the target increments and thus Greggain teaches an adaptive filtering wherein the number of phases depends upon the output resolution. Greggain mapping the target increment into a specific filter size or the number of phases (column 2). Greggain's number of upsample increments or the number of phases used in the adaptive filtering is determined using the right shifting the target output resolution parameter such as the target increment and moreover, Greggain's look up table

for mapping the output resolution into the number of phases or the filter size may also be determined by the right shifting. Greggain thus expressly discloses "a third variable" from the output of the filter look-up table which maps the filter size to a filter factor and then right-shifts the target increment by this amount to generate the number of phases.

Therefore, having the combined teaching of Parker and Greggain as a whole, one of ordinary skill in the art would have found it obvious to incorporate adaptive filtering of Greggain into Parker's method to construct the number of phases from the output resolution by right shifting the number of output pixels in accordance to the user's defined target increments resulting in correctly Nyquist bandlimited target pixels or lines or frames of the warped images (See column 1).

Claim 2:

Parker further discloses the claim limitation of determining a GCD for the input resolution and the output resolution and determining the first variable by dividing the input resolution by the GCD (see column 7, lines 1-15).

Claims 3-4:

Parker further discloses the claim limitation of determining the second variable by dividing the output resolution by the GCD.

Although Parker is silent to the claim limitation of "determining the third variable by right shifting the second variable to obtain a value less than or equal to an available number of phases", Parker discloses the possible phases and the number of phases an input-output grid

overlay pattern has depends on the tile sizes determined for the input and output image resolution (column 8). Therefore, Parker at least suggests the claim limitation of "determining the third variable by right shifting the second variable to obtain a value less than or equal to an available number of phases" because the third variable may equal to the number of phases.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have constructed the number of phases for determining the output pixel values based on the input and output resolution, phases and registration (column 8).

Moreover, Greggain teaches an adaptive filter wherein the number of phases is determined using the filter lookup table as a function of the output resolution, i.e., the target increments and thus Greggain teaches an adaptive filtering wherein the number of phases depends upon the output resolution. Greggain mapping the target increment into a specific filter size or the number of phases (column 2). Greggain's number of upsample increments or the number of phases used in the adaptive filtering is determined using the right shifting the target output resolution parameter such as the target increment and moreover, Greggain's look up table for mapping the output resolution into the number of phases or the filter size may also be determined by the right shifting. Greggain thus expressly discloses "a third variable" from the output of the filter look-up table which maps the filter size to a filter factor and then right-shifts the target increment by this amount to generate the number of phases.

Therefore, having the combined teaching of Parker and Greggain as a whole, one of ordinary skill in the art would have found it obvious to incorporate adaptive filtering of Greggain into Parker's method to construct the number of phases from the output resolution by right shifting the number of output pixels in accordance to the user's defined target increments

resulting in correctly Nyquist bandlimited target pixels or lines or frames of the warped images (See column 1).

Claim 5:

Parker further discloses the claim limitation of determining the input resolution by reading a register value because the input resolution parameters are stored in the register (column 5-8).

Claim 6:

Parker further discloses the claim limitation of the register value representing a number of input pixels in a specific dimension such as the horizontal dimensional (column 5-8).

Claim 7:

The claim 7 is subject to the same rationale of rejection set forth in the claim 1.

Claim 8:

Parker further discloses the claim limitation of each one of the coefficient sets including three-eight coefficients (column 8-10).

Claim 9:

Although Parker and Greggain are silent to "a number of bits associated with the eight coefficients being 75 bits", Parker discloses each one of the coefficient sets including three-eight coefficients (column 8-10) wherein the number of bits associated with the eight coefficients are

more or less than 75 bits. Therefore, Parker at least suggests the claim limitation of "a number of bits associated with the eight coefficients being 75 bits".

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to have incorporated the specific number of bits to be associated with the number of bits with the eight coefficients for determining the output pixel values based on the input and output resolution, phases and registration (column 8).

Claim 10, 16-18:

The claims are subject to the same rationale of rejection set forth in the claim 1.

Claim 11:

Parker further discloses accessing a coefficient set based on the index phase value and determining a scaled pixel value based upon the coefficient set (See column 8).

Claims 12-13:

Parker further discloses accessing the coefficient set by the phase and registration and thereby suggests accessing the coefficient set from a mirror location or accessing the coefficient set from a direction location for determining the output pixel values based on phases and registration.

Claims 14-15:

Parker further discloses bit word within the pixel data or the image data and the bit word incorporating a plurality of resolution parameters, phase parameters and registration parameters.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jin-Cheng Wang whose telephone number is (571) 272-7665. The examiner can normally be reached on 8:00 - 6:30 (Mon-Thu).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jcw

MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER